

**WHAT IS CLAIMED IS:**

1. A subscriber station (SS) handover method upon receiving a handover request from the SS in a BWA (Broadband Wireless Access) communication system comprised of a serving BS (Base Station) and a plurality of neighbor BSs adjacent to the serving BS, comprising the steps of:
  - a) receiving from the serving BS information relating to the plurality of neighbor BSs;
  - b) measuring CINRs (Carrier to Interference and Noise Ratios) of pilot signals transferred from the neighbor BSs upon receipt of the information relating to the neighbor BSs;
  - c) transmitting a handover request signal to the serving BS along with pilot signal CINR information of the neighbor BSs;
  - d) receiving from the serving BS information of a target BS from among the neighbor BSs; and
  - e) performing a handover function from the serving BS to the target BS.
2. The method as set forth in claim 1, wherein the information of the neighbor BSs includes information indicative of the number of neighbor BSs, BS ID information for identifying the neighbor BSs, and individual carrier frequency information of the neighbor BSs.
3. The method as set forth in claim 1, wherein step (c) includes the steps of:
  - c1) detecting from among the pilot signal CINRs of the neighbor BSs pilot signal CINRs of neighbor BSs having a predetermined minimum pilot

signal CINR;

c2) detecting pilot signal CINRs greater than those of the serving BS during more than a predetermined minimum time from among neighbor BSs' pilot CINRs greater than the minimum pilot signal CINR; and

5 c3) transmitting a handover request signal to the serving BS along with the pilot signal CINR greater than that of the serving BS during more than the predetermined minimum time.

4. The method as set forth in claim 3, further comprising the step of:

f) controlling the SS so not to perform a pilot signal CINR measurement  
10 operation in association with a neighbor BS for transmitting a pilot signal less than the minimum pilot signal CINR.

5. The method as set forth in claim 1, wherein the handover request signal includes QoS (Quality of Service) information of a service desired by the SS and requested bandwidth information associated with the service.

15 6. A serving BS (Base Station) handover method upon receiving a handover request from an SS (Subscriber Station) in a BWA (Broadband Wireless Access) communication system comprised of a serving BS and a plurality of neighbor BSs adjacent to the serving BS, comprising the steps of:

a) transmitting to the SS information relating to the neighbor BSs;  
20 b) receiving a handover request signal containing CINR (Carrier to Interference and Noise Ratio) information of pilot signals of the neighbor BSs from the SS;  
c) determining if the neighbor BSs contained in the handover request

signal can support a handover function for the SS, and selecting a target BS acting as a handover target of the SS from among neighbor BSs capable of supporting the handover function for the SS; and

- d) transmitting a response signal associated with the handover request signal of the SS along with the target BS information, and informing the target BS of a handover ready state of the SS.

7. The method as set forth in claim 6, wherein the handover request signal includes QoS (Quality of Service) information of a service desired by the SS and requested bandwidth information associated with the service.

10        8. The method as set forth in claim 7, wherein step (c) for determining whether the neighbor BSs contained in the handover request signal can support the handover function for the SS includes the step of:

- c1) determining whether each of the neighbor BSs are able to support the QoS and requested bandwidth information.

15        9. The method as set forth in claim 6, wherein the information of the neighbor BSs includes information indicative of the number of neighbor BSs, BS ID information of the neighbor BSs, and carrier frequency information of the neighbor BS.

20        10. The method as set forth in claim 6, wherein step (d) for informing the target BS of a handover ready state of the SS includes the step of:

- d1) informing the target BS of a handover ready state of the SS using a BS ID of the target BS and a CID (Connection ID) assigned from the serving BS

to the SS.

11. The method as set forth in claim 6, further comprising the step of:
  - e) if it is not possible for any one of the neighbor BSs contained in the handover request signal to support the handover function, informing the SS of  
5 the handover unable state.
12. An SS (Subscriber Station) handover method upon receiving a handover request from the SS (Subscriber Station) in a BWA (Broadband Wireless Access) communication system comprised of a serving BS (Base Station) and a plurality of neighbor BSs adjacent to the serving BS, comprising  
10 the steps of:
  - a) receiving from the serving BS information relating to the plurality of neighbor BSs and handover condition information;
  - b) measuring CINRs (Carrier to Interference and Noise Ratios) of pilot signals transferred from the neighbor BSs upon receipt of the neighbor BSs  
15 information;
  - c) selecting a plurality of candidate BSs corresponding to the handover condition information from among the neighbor BSs, and transmitting a handover request signal to the serving BS along with pilot signal CINR information of the candidate BSs;
  - d) upon receipt of the handover request signal, receiving from the serving BS information of a target BS from among the candidate BSs; and  
20
  - e) performing a handover function from the serving BS to the target BS.

13. The method as set forth in claim 12, wherein the information of the

neighbor BSs includes information indicative of the number of neighbor BSs, BS ID information for identifying the neighbor BSs, carrier frequency information of the neighbor BSs, and frequency offset and frame offset information of the neighbor BSs.

5        14. The method as set forth in claim 12, wherein the handover condition information includes a minimum pilot signal CINR, a maximum time during which a specific neighbor BS selected from among the neighbor BSs to have a CINR less than the minimum pilot signal CINR can act as the candidate BS, a minimum time during which a pilot signal CINR of either one candidate BS from  
10      among the candidate BSs must be greater than that of the serving BS to perform the handover function of the SS.

15. The method as set forth in claim 14, further comprising the step of:  
f) controlling the SSSo not to measure a pilot signal CINR in association with the neighbor BS transmitting a pilot signal less than the minimum pilot  
15      signal CINR.

16. The method as set forth in claim 12, wherein the handover request signal includes QoS (Quality of Service) information of a service desired by the SS and requested bandwidth information associated with the service.

17. A handover method upon receiving a handover request from an SS  
20      (Subscriber Station) in a BWA (Broadband Wireless Access) communication system comprised of a serving BS (Base Station) and a plurality of neighbor BSs adjacent to the serving BS, comprising the steps of:

- a) controlling the serving BS to transmit to the SS information of the neighbor BSs and handover condition information;
- b) controlling the SS to measure CINRs (Carrier to Interference and Noise Ratios) of pilot signals transferred from the neighbor BSs according to the 5 neighbor BSs information;
- c) controlling the SS to determine a plurality of candidate BSs corresponding to handover condition information from among the neighbor BSs, and transmitting to the serving BS a handover request signal along with pilot signal CINR information of the candidate BSs;
- 10 d) if the serving BS receives the handover request signal from the SS, determining if the neighbor BSs contained in the handover request signal can support a handover function for the SS, and selecting a target BS acting as a handover target of the SS from among candidate BSs capable of supporting the handover function for the SS;
- 15 e) controlling the serving BS to transmit a response signal associated with the handover request signal to the SS along with the target BS information, and informing the target BS of a handover ready state of the SS; and
- f) controlling the SS to perform a handover operation from the serving BS to the target BS according to the target BS information contained in the handover 20 request response signal.

18. The method as set forth in claim 17, wherein the information of the neighbor BSs includes information indicative of the number of neighbor BSs, BS ID information for identifying the neighbor BSs, carrier frequency information of the neighbor BSs, and frequency offset and frame offset information of the 25 neighbor BSs.

19. The method as set forth in claim 17, wherein the handover condition information includes a minimum pilot signal CINR, a maximum time during which a specific neighbor BS selected from among the neighbor BSs to have a CINR less than the minimum pilot signal CINR can act as the candidate BS, a  
5 minimum time during which a pilot signal CINR of either one candidate BS from among the candidate BSs must be greater than that of the serving BS to perform the handover function of the SS.

20. The method as set forth in claim 19, further comprising the step of:  
g) controlling the SS so not to measure a pilot signal CINR in association  
10 with the neighbor BS transmitting a pilot signal less than the minimum pilot signal CINR.

21. The method as set forth in claim 20, wherein the handover request signal includes QoS (Quality of Service) information of a service desired by the SS and requested bandwidth information associated with the service.

15 22. The method as set forth in claim 21, wherein step (d) for determining whether the candidate BSs contained in the handover request signal can support the handover function for the SS includes the step of:

d1) determining whether each of the candidate BSs are able to support the QoS and requested bandwidth information.

20 23. The method as set forth in claim 17, wherein step (e) for informing the target BS of a handover ready state of the SS includes the step of:

e1) informing the target BS of the handover ready state of the SS using a BS ID of the target BS and a CID (Connection ID) assigned from the serving BS to the SS.

24. The method as set forth in claim 17, further comprising the step of:

5        h) if it is not possible for any of the neighbor BSs contained in the handover request signal to support the handover function, controlling the serving BS to inform the SS of the handover unable state.

25. The method as set forth in claim 17, further comprising the step of:

10      i) if the serving BS transmits to the SS a response signal associated with the handover request signal, controlling the serving BS to release a link connected to the SS.

26. A handover apparatus upon receiving a handover request from the SS (Subscriber Station) in a BWA (Broadband Wireless Access) communication system comprised of a serving BS (Base Station) and a plurality of neighbor BSs

15      adjacent to the serving BS, comprising:

the serving BS, which transmits information of the neighbor BSs and handover condition information to the SS, determines if the neighbor BSs contained in the handover request signal can support a handover function for the SS upon receiving the handover request signal from the SS, selects a target BS

20      acting as a handover target of the SS from among candidate BSs capable of supporting the handover function for the SS, transmits a response signal associated with the handover request signal to the SS along with the target BS information, and informs the target BS of a handover ready state of the SS; and

the SS, which measures CINRs (Carrier to Interference and Noise Ratios) of pilot signals transferred from the neighbor BSs according to the neighbor BSs information, selects a plurality of candidate BSs corresponding to handover condition information from among the neighbor BSs, transmits a handover request signal to the serving BS along with pilot signal CINR information of the candidate BSs, and performs a handover operation from the serving BS to the target BS according to the target BS information contained in the handover request response signal.

27. The apparatus as set forth in claim 26, wherein the information of the  
10 neighbor BSs includes information indicative of the number of neighbor BSs, BS ID information for identifying the neighbor BSs, carrier frequency information of the neighbor BSs, and frequency offset and frame offset information of the neighbor BSs.

28. The apparatus as set forth in claim 26, wherein the handover condition  
15 information includes a minimum pilot signal CINR, a maximum time during which a specific neighbor BS selected from among the neighbor BSs to have a CINR less than the minimum pilot signal CINR can act as the candidate BS, a minimum time during which a pilot signal CINR of either one candidate BS from among the candidate BSs must be greater than that of the serving BS to perform  
20 the handover function of the SS.

29. The apparatus as set forth in claim 28, wherein the SS does not measure a pilot signal CINR in association with the neighbor BS transmitting a pilot signal less than the minimum pilot signal CINR.

30. The apparatus as set forth in claim 28, wherein the handover request signal includes QoS (Quality of Service) information of a service desired by the SS and requested bandwidth information associated with the service.
31. The apparatus as set forth in claim 30, wherein the serving BS determines whether each of the candidate BSs are able to support the QoS and requested bandwidth information such that it can determine if the candidate BSs are able to support the handover function for the SS.
32. The apparatus as set forth in claim 26, wherein the serving BS informs the target BS of a handover ready state of the SS using a BS ID of the target BS and a CID (Connection ID) assigned from the serving BS to the SS.
33. The apparatus as set forth in claim 26, wherein the serving BS, if it is not possible for any one of the candidate BSs contained in the handover request signal to support the handover function for the SS, informs the SS of the handover unable state.
34. The apparatus as set forth in claim 26, wherein the serving BS transmits a response signal associated with the handover request signal to the SS, and releases a link connected to the SS.